



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/877,182	06/11/2001	Daniel C. Liebler	204931US-20	1234

22850 7590 03/14/2006

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.  
1940 DUKE STREET  
ALEXANDRIA, VA 22314

EXAMINER
----------

SODERQUIST, ARLEN

ART UNIT	PAPER NUMBER
----------	--------------

1743

DATE MAILED: 03/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/877,182

Applicant(s)

LIEBLER ET AL.

Examiner

Arlen Soderquist

Art Unit

1743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 10, 13, 15-17, 23, 26, 28-31, 33-37, 40, 43, 44 and 46-48 is/are rejected.
- 7) ☒ Claim(s) 5-9, 11, 14, 18-22, 24, 25, 27, 32, 38, 39, 41, 42 and 45 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

Art Unit: 1743

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 8, 2006 has been entered.

2. Relative to the rejections which follow, examiner makes the following statement with regard to the scope of the term user as found in the claims. On page 8, lines 10-12 of the instant specification applicant has defined user to be "a human, a computer program, or any object capable of transmitting instructions causing the present invention to be performed." This is the scope of user that is being used in the examination and application of art below.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4, 10, 13, 15-17, 23, 26, 28-31, 33-37, 40, 44 and 46-48 are rejected under 35 U.S.C. 102(b) as being anticipated by Wade. In the paper Wade teaches the development of algorithms for automated elucidation of spectral feature/substructure relationships in tandem mass spectrometry. A pattern-recognition artificial-intelligence program, referred to as MAPS (method for analyzing patterns in spectra), is described for the identification of relationships that exist between the presence of substructures in molecules and the characteristic features they produce in mass spectrometry (MS) and tandem MS data. The MAPS algorithm discovers these relationships by intelligent analysis of a database of MS and tandem MS spectra. The relationships found are expressed as rules, which may then be used to identify characterized substructures in "unknowns". No prior knowledge of fragmentation pathways or rearrangements is assumed in the rule-generation process. While MAPS currently uses MS and tandem MS data, the approach (and much of the software) is equally suited to multiple-stage mass spectrometric data. In the last paragraph of page 169, Wade teaches that some common fragment ions and their assumed neutral losses that are based on the difference between two peaks have been recognized as fairly specific indicators of certain substructures and are in use in spectral interpretation. In the third paragraph of page 171, Wade describes work done by Cross in which

Art Unit: 1743

individual daughter spectra were correlated with specific substructures. The presence of these substructures was then determined by matching the daughter spectra of unknowns against the reference spectra. In the paragraph bridging pages 173-174 the processing of data is explained including extraction of relevant data and verification that the spectra are in the proper format and error-free. Pages 174-178 teach how the rules that govern the searches in the unknown spectra are established. This includes  $m/z$  values seen in conventional and daughter scans, neutral losses, parent-to-daughter transitions and the presence of a molecular ion. Pages 178-180 teach how unknown spectra are evaluated using these rules. With respect to the steps of claim 1, the first three steps are covered as the computer uses the established rules to look for a substructure in unknown spectra. The final step is taught in the first paragraph under the "Validation of substructure identification rules" subheading on page 180 in the use of a match value or a percentage of the features in a rule that are met by the compound. Also see table 2 showing how changing the match value changes the number of unknown compounds that the computer returns as having a particular substructure. This is an anticipatory disclosure based on applicant's definition of "user" as set forth above.

5. Claims 1-2, 10, 12-13, 28-31, 33-35, 37, 40, 43-44 and 46-48 are rejected under 35 U.S.C. 102(b) as being anticipated by Kwiatkowski. In the paper Kwiatkowski presents a combined forward-reverse library search system (routine) for the identification of low-resolution mass spectra. The routine requires binary-coded spectra. Masses and peak intensities are used for spectral comparison. On the basis of 3 possible search strategies, this routine is adaptable to analytical problems. The program was tested for 25,000 spectra from the ISAS, MSDC and EPA mass spectra libraries. The program is written completely in FORTRAN IV. in this paper either the unknown spectra or the library spectra are used as the spectral characteristics to mine. the routine produces a match factor (page 220, last full paragraph) that is used to indicate the similarity between the two spectra being compared. See table 4 for an example of the results of the search. This is an anticipatory disclosure based on applicant's definition of "user" as set forth above.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1743

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
7. Claims 1-4, 10, 13, 15-17, 23, 26, 28-31, 33-37, 40, 44 and 46-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wade as applied to claims 1-4, 10, 13, 15-17, 23, 26, 28-31, 33-37, 40, 44 and 46-48 are above, and further in view of Amado (US 5,701,400, newly cited and applied), Eisenberg (US 6,453,242, newly cited and applied) and Yates (US 6,017,693, newly cited and applied). Wade does not teach a human as the user entering the desired characteristics to search.

In the patent Amado teaches method and apparatus for applying rules to data sets in a relational database. Column 1 lines 22-42 teach the use of such a system in a variety of applications including an automatic discovery tool such as a database miner. Column 3, lines 29-40 teach some data analysis and interpretation systems including one that analyzes molecular structure based on mass spectral data. Column 7, lines 35-49 discuss a system that uses user entered input variables. In the paragraph bridging columns 16-17, a system is described that leads the user through he task of eliciting and structuring the expertise and developing the operational model of the expertise.

In the patent Eisenberg discusses selection of sites for targeting a binding material. Taught in the paragraph bridging columns 19-20 is method of evaluating a potential target site based both on values in a correspondence table and on the presence of one or more D-able subsites. This is achieved by user input of a context parameter to provide a scaled score for one or more combinations of triplet and a particular position, if the context of the triplet indicates presence of a D-able subsite. For example, a triplet 5'NNG3' followed by an A does not provide

Art Unit: 1743

a D-able subsite. However, 5'NNG3' followed by a K does provide a D-able site. The user can elect to input a context parameter that increases the value of the subscore for the 5'NNG3' triplet when 5' NNG3' is followed by a K. The scaled subscore for this triplet is then combined with subscores or scaled subscores for other triplets to give an overall score for a potential target site. Example 10 shows the inputs and outputs including those that are user inputs.

In the patent Yates teaches the identification of nucleotides, amino acids or carbohydrates by mass spectrometry. This is done by correlating a fragment mass spectrum with sequences in a database through an automated system. Column 9, lines 24-49 discuss flow charts that show the analysis procedure. Included in this is a preprocessing procedure in which user entered information is used to modify the spectrum.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the ability for a human user or operator to input data, variables or other commands as taught by Amado, Eisenberg or Yates into the Wade routine because of the ability to modify or direct the process to find relevant results as taught by Amado, Eisenberg and Yates.

8. Claims 1-2, 10, 12-13, 28-31, 33-35, 37, 40, 43-44 and 46-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kwiatkowski as applied to claims 1-2, 10, 12-13, 28-31, 33-35, 37, 40, 43-44 and 46-48 are above, and further in view of Amado, Eisenberg and Yates as explained above. Kwiatkowski does not teach a human as the user entering the desired characteristics to search.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the ability for a human user or operator to input data, variables or other commands as taught by Amado, Eisenberg or Yates into the Kwiatkowski routine because of the ability to modify or direct the process to find relevant results as taught by Amado, Eisenberg and Yates.

9. Claims 5-9, 11, 14, 18-22, 24-25, 27, 32, 38-39, 41-42 and 45 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The art of record fails to teach or fairly suggest these limitations in combination with the elements of the claims from which they depend.

Art Unit: 1743

10. Applicant's arguments filed February 8, 2006 have been fully considered but they are not persuasive. Relative to the anticipation rejections applicant is directed to page 8, lines 10-12 of the instant specification. In that section applicant has defined user to be "a human, a computer program, or any object capable of transmitting instructions causing the present invention to be performed." This is the scope of "user" that is being used in the examination and application of art below. Thus the claims are still anticipated since the term "user" is defined by applicant in a very broad manner. Relative to the possibility that the claims could be narrowed to a human user/operator, the Amado, Eisenberg and Yates references showing the interfacing of a human user/operator have been applied.

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additionally cited art is directed to methods, apparatus and computer programs that have user/operator input.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arlen Soderquist whose telephone number is (571) 272-1265. The examiner can normally be reached on Monday-Thursday and Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Arlen Soderquist  
Primary Examiner